

Atoms for Peace After 50 Years:

Regional and International Mechanisms for Management of Nuclear materials

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July 2003



Goals of Nuclear Waste Storage and Disposal

- to enhance world **SECURITY** in the short and long term by minimising the threat of potential misuse of U and Pu: **THIS IS THE MOST URGENT CHALLENGE**
- to store and dispose of long-lived wastes so as to ensure the **SAFETY** of future generations: **THIS IS EQUALLY IMPORTANT FOR THE FUTURE OF NUCLEAR TECHNOLOGIES**

Priority of challenges

Public perception

1. HLW/SNF
2. LLW
3. Legacy wastes
4. Mining residues
5. Weapon materials

Actual?

1. Weapon materials
2. Legacy wastes
3. Mining residues
4. LLW
5. HLW/SNF

50+ YEARS AGO the security challenge was clearly recognised, e.g.

- the Acheson-Lilienthal report 1947
- the Atoms for Peace initiative 1953
- founding of the IAEA 1957

..... etc. as is well detailed in the "draft rolling text"

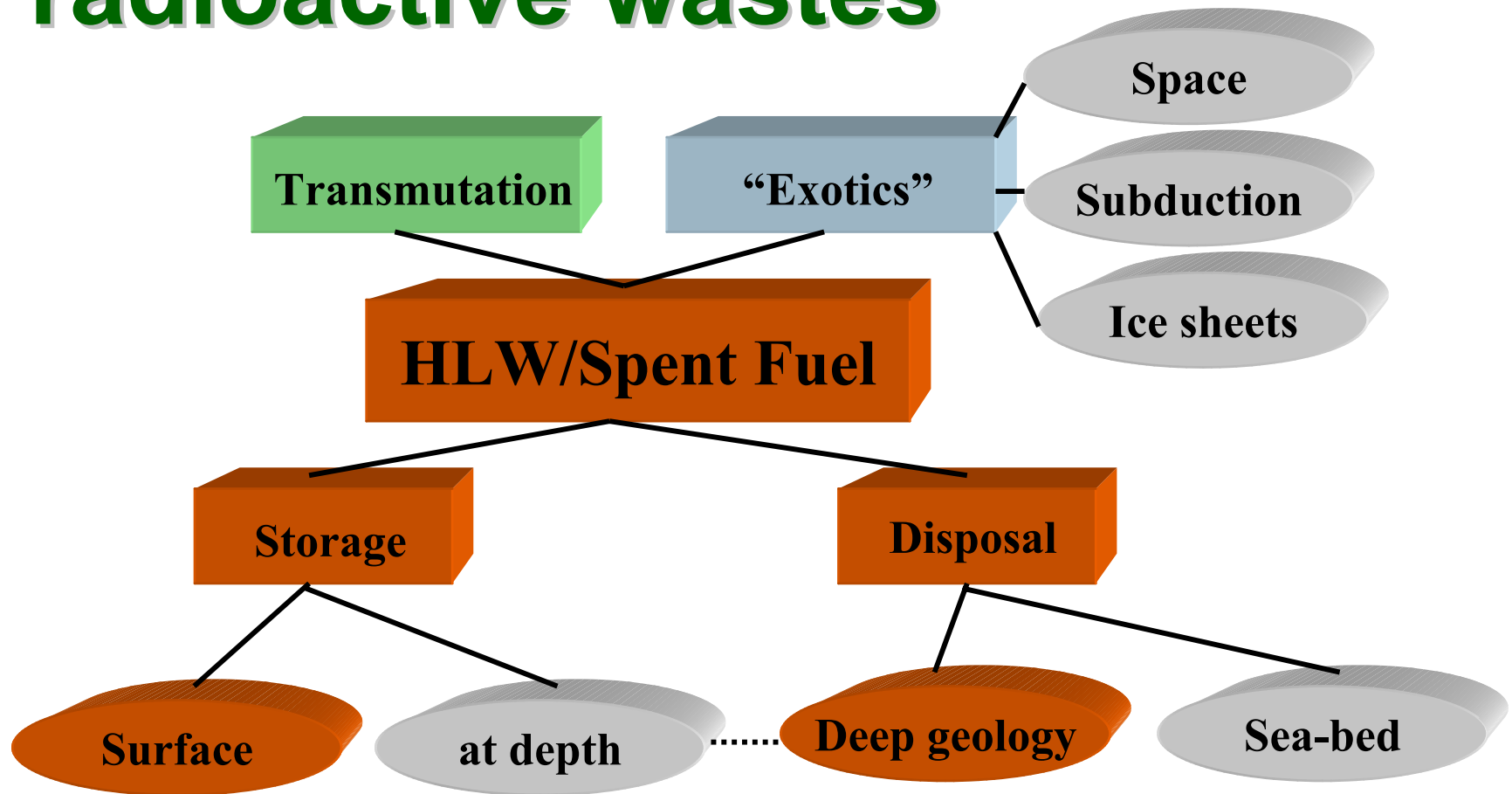
45 YEARS AGO the environmental safety challenge was also recognised, e.g.

«much has been written in speculation regarding the impact, or lack thereof, of radioactive wastes on the development of nuclear technology. it has been said that safe and adequate waste management is the major obstacle confronting the orderly economic growth of applications of the benefits of nuclear fission to medicine, agriculture and industry»

Joseph Lieberman (1958)



Long-term management of radioactive wastes

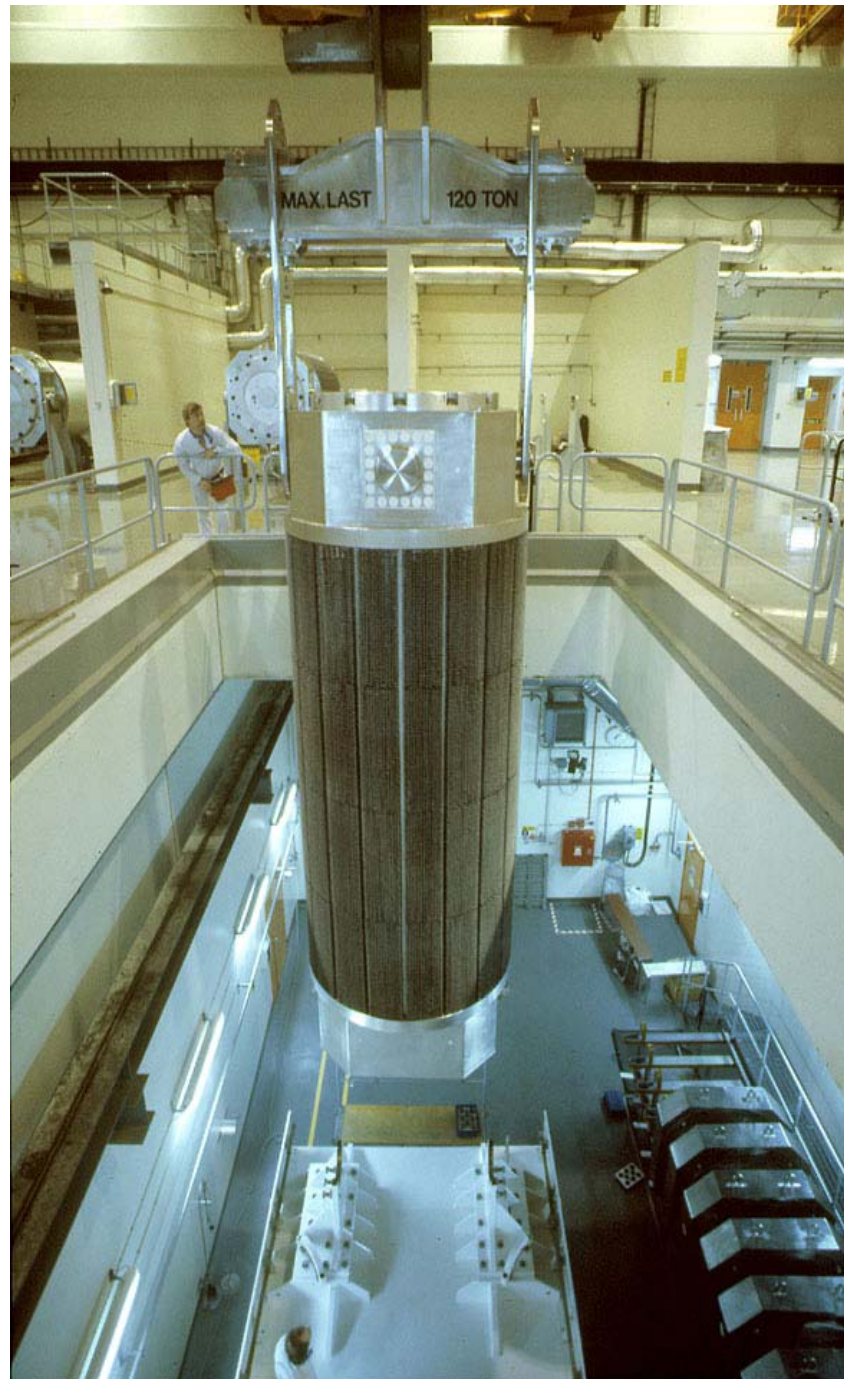


Long-term storage

- Technically straightforward
- Requires maintenance and control
- Needed in **all** national programmes
- Urgently needed in some cases
- Options: at reactor or centralised
- Siting of **new** facilities is problem
- Successes – S, SF, B, NL, CH, ...
- Problems – ROC, USA, J, E

CLAB
Sweden

Pool Storage



us

ZWILAG

storage facility: containers



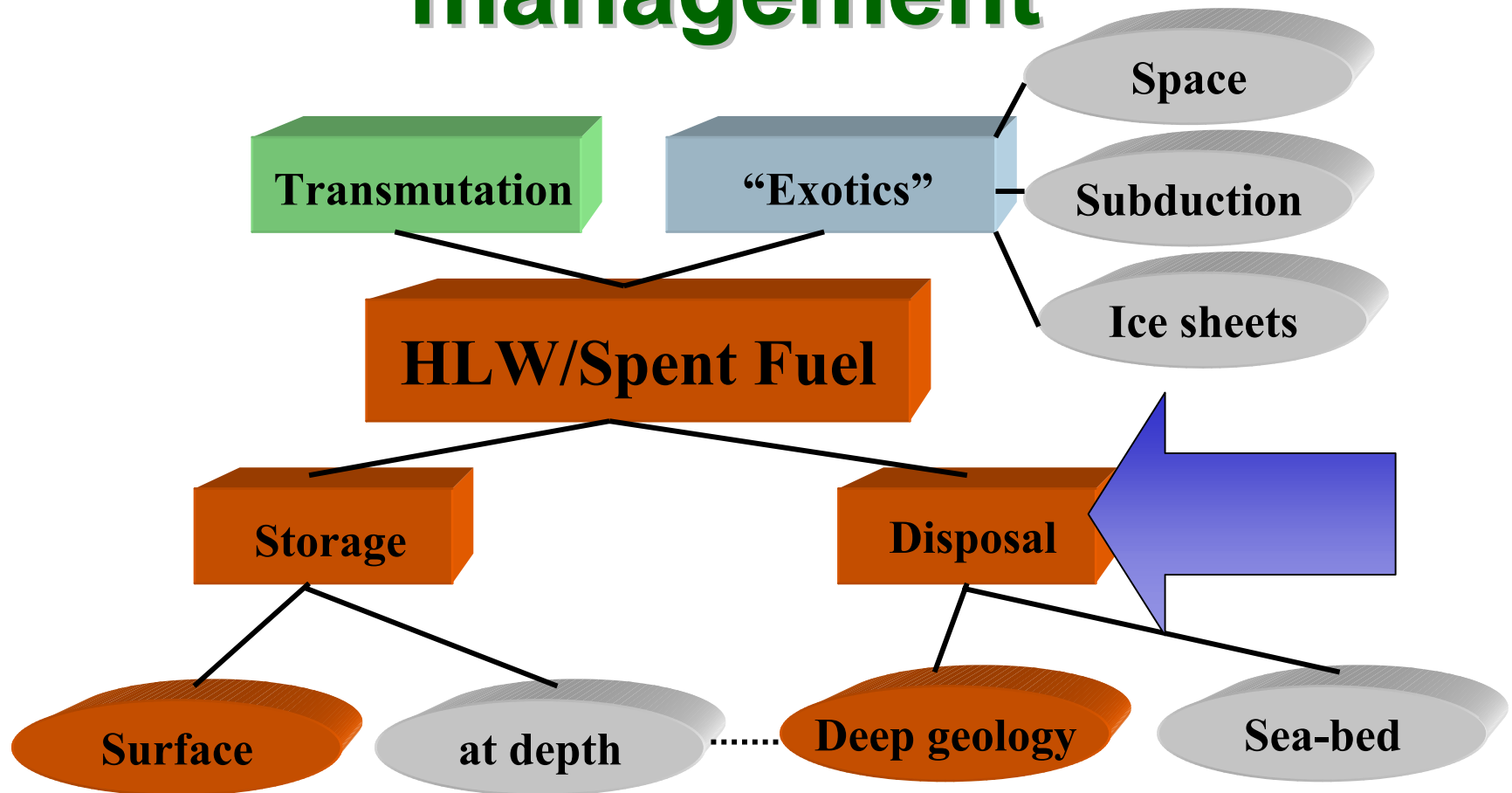
ZWILAG



Germany: a special case...

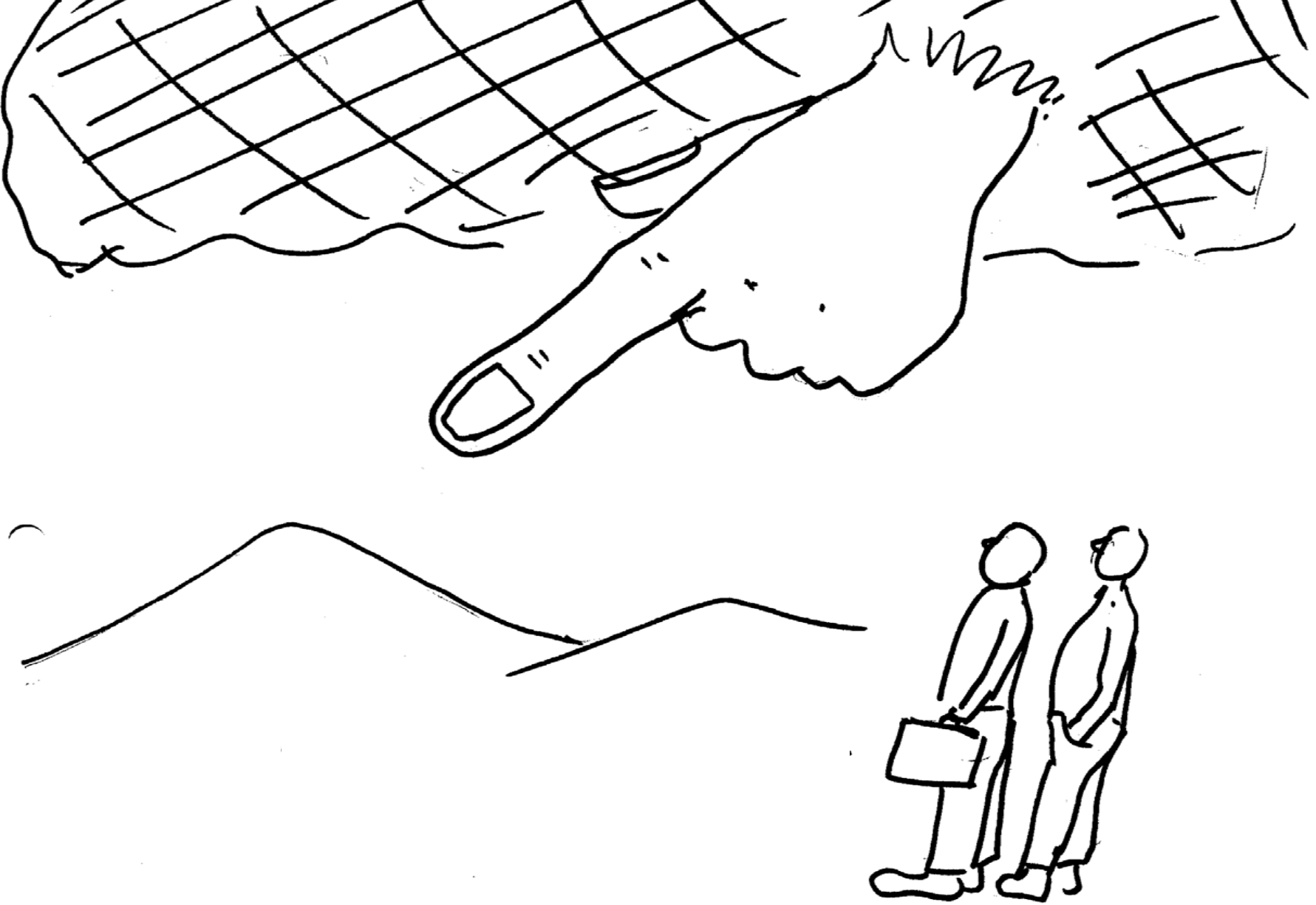
- **Spent fuel storage facilities available at Gorleben and Ahaus**
- **Massive demonstrations against transport (to Gorleben only)**
- **Assertion by government that transport is too risky**
- **Decision to require at reactor storage**

Long-term waste management



Disposal – key issues

- **Is the concept scientifically and socially acceptable?**
- **Is there any credible alternative?**
- **Is geological disposal affordable for all potential users?**
- **How and where can we find sites for repositories???**



**This looks like it could be a
promising site**

The evolution of nuclear facility siting

- remote siting
- co-location with existing facilities
- expert opinion ("Decide, Announce, Defend")
- technocratic; traceable, defensible?
- pragmatic (multiattribute analyses)
- volunteering (or at least assent)

Implementation plan and schedule

- Huge delays in all schedules (SF excepted)
- Staged approach favoured by all
- Front runners USA, SF, S (<2020)
- Others (much) later CH, J, UK (>2050)
- Impact of proposed EU directive?
- Some fully open E, CDN
- new pressure in EU??

Draft EU Directive 2002: Article 5

- ...authorisation for development of sites no later than 2008 (for geological disposal conditional)
- ...authorisation of operation for LLW facilities no later than 2013
- ...authorisation of operation for HLW facilities no later than 2013

How many repositories does Europe need??



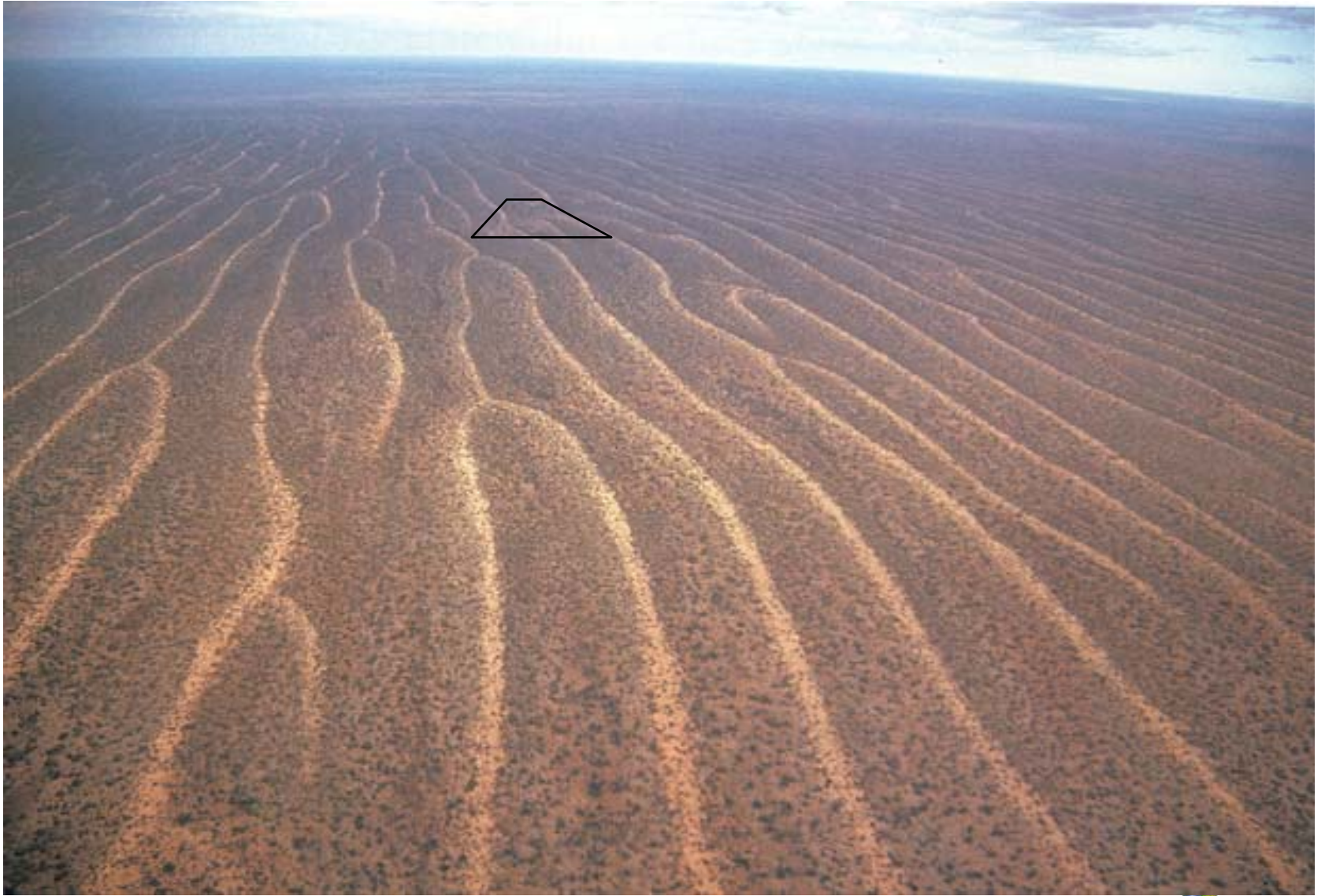
Draft EU Directive 2002: memorandum

"A regional approach, involving two or more countries, could also offer advantages especially to countries that have no or limited nuclear programmes, insofar as it would provide a safe and less costly solution for all parties."





Aerial Perspective



Who can promote international or regional approaches?



IAEA

- charter would allow more actions
- strong political influences
- becoming more pro-active (2003)



EU

- conflicting views on nuclear
- recent initiative for regional solutions



Asia? South America? Africa?

- no strong operational regional bodies



Private co-operation initiatives

- still need Government support

Multinational Scenarios for Repositories (IAEA)

- **Type I – "add-on"**
- **Type II – "co-operation"**
 - **equal partners with small inventories**
 - **partners in different development stages**
 - **repositories for specialised waste types**
- **Type III - international or supranational**

The way ahead?

- National repositories "show the way"
- The international community actively supports shared repository concepts
- International organisations agree to assume more responsibilities
- Regional concepts progress (in Europe and elsewhere)
- International facilities are implemented
– e.g. the high isolation concept

The End